A Utilities Appendix

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A Inventory of City Utilities, Capacity Information & Future Facility Needs

Seattle City Light

Seattle City Light (SCL) is the City-owned electric utility serving approximately 131 square miles, including all of Seattle and some portions of King County north and south of Seattle city limits.

Seattle City Light: inventory

SCL generates between 56 percent and 75 percent of the energy that it sells to retail customers from its own facilities. This percent share varies with water conditions because all SCL-owned resources are hydroelectric. The largest facilities are the Boundary Project, on the Pend Oreille River in northeast Washington, and the Skagit Project, which consists of three hydroelectric dams (Ross, Diablo and Gorge) on the Skagit River. The Newhalem Hydroelectric Plant, located on Newhalem Creek, was built in 1921 to supply power to the Skagit Project. It was modernized in 1970 and produces a small amount of energy. The Cedar Falls Dam on the Cedar River and the South Fork Tolt Dam on the South Fork Tolt River are also smaller generating facilities owned by SCL. In addition to these power sources, SCL purchases power from the Bonneville Power Administration (BPA), including firm amounts under the Block Product and a share in the output from the Federal System (Slice Product), which depends on water conditions. SCL also holds firm power purchase contracts with a number of other suppliers in the Pacific Northwest. These contracts include power generated from hydroelectric sources, including a combined-cycle combustion turbine (Klamath Falls in Oregon) and a share in the State Line Wind Project located in Southeast Washington and Northeast Oregon. (See Utilities Figure A-1.)

SCL owns and maintains approximately 657 miles of transmission lines which carry power from the Skagit and Cedar Falls generating facilities to 14 principal substations. SCL is dependent on other transmission line owners, i.e., the Bonneville Power Administration (BPA), to bring power from its Boundary Dam hydroelectric plant and from other contracted resources, to serve its load in Seattle. The transmission grid interconnection with other utilities also provides additional reliability to meet load requirements. Power is distributed from SCL's principal substations via high voltage feeder lines to numerous smaller distribution substations and pole transformers which reduce voltage to required levels for customers. SCL owns and maintains 2,428 circuit miles of distribution lines within Seattle that deliver power from the 14 principal substations to approximately 365,200 customers. (See Utilities Figure A-2).

Seattle City Light: existing capacity

SCL's current generation capability (owned and contracted) is adequate to serve existing customers. Because of the nature of City Light's hydroelectric system, the utility is not presently constrained by its ability to meet peak loads (typically referred to as capacity). At times, the system may be constrained in its ability to carry load over periods of heavy load hours (6 a.m. to 10 p.m.) during the winter. On an average monthly basis, City Light currently has sufficient resources to meet expected customer load in the next few years, even under serious drought conditions.

SCL sells on the wholesale energy markets the energy it does not need to meet customer load. The utility also buys energy in the wholesale markets to enhance the value of its resource portfolio and to meet occasional short-term energy deficits.

Seattle City Light: anticipated future facilities

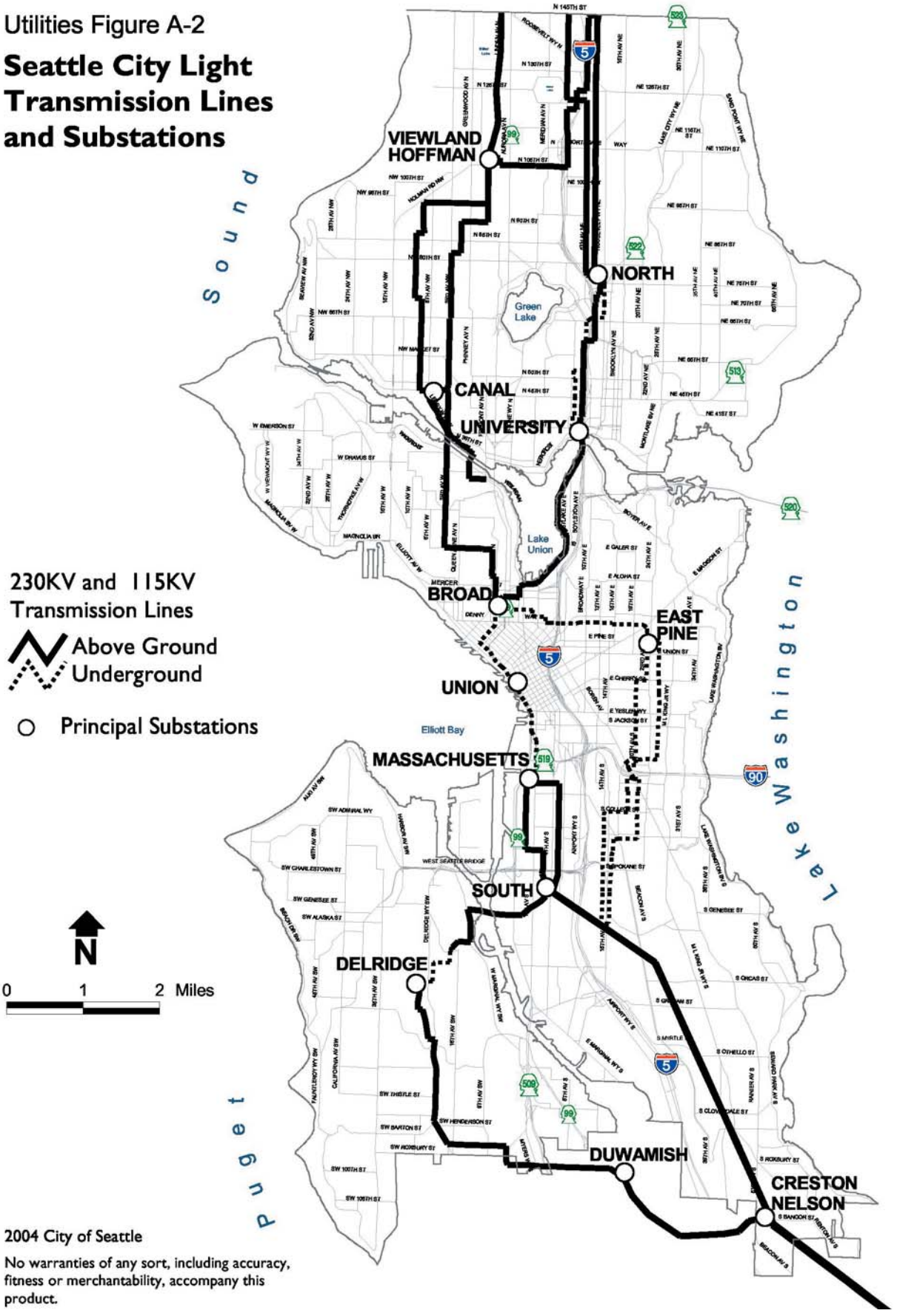
City Light's current contract with BPA extends through the end of September 2011 and includes an increase in the firm amount of power purchased effective in October 2006. The utility has committed to meet its load growth through 2011 with conservation and renewable resources and is on target to achieve this goal. Given projected customer load growth, no significant resource addition is anticipated until 2005 or 2006.

For the transmission and distribution components of SCL's system, projected growth will be accommodated by planned transmission and distribution capacity additions. The addition of a transformer at the Bothell Substation in Snohomish County will serve the principal substations from the Snohomish County line to the Lake Washington Ship Canal. Within the Comprehensive Plan's 20 year timeframe a new principal substation will be necessary downtown, with an underground transmission line connection to the South substation. Capacity would also be expanded at the North, Duwamish, Shoreline, University and Creston substations. New substations also may be built in the next five to twenty years at Interbay, in the SODO area and in South Lake Union, depending on load growth projections and emerging real construction. Substations in the Northeast and Northwest parts of the City may also be built in the 20-year period. City Light owns properties for the Interbay, NE and NW substations.

Utilities Figure A-1

Utilities Figure A-2

Seattle City Light Transmission Lines and Substations



Seattle Public Utilities (water utility)

Seattle Public Utilities (SPU) provides water service to customers of Seattle and portions of King County. In addition, SPU sells wholesale water to more than two dozen suburban water districts, municipalities, and nonprofit water associations ("purveyors") which serve retail water customers in most of the urban areas in north, east, and south King County, and a small part of southwest Snohomish County. (See Utilities Figure A-3). SPU operates under an Operator's Certificate granted by the State Department of Health. Information about the certificate and the water system can be found in Seattle's Water System Plan.

Seattle Public Utilities: inventory

SPU supplies drinking water from two major water supply sources, the Cedar River Watershed and the South Fork of the Tolt River Watershed, and a small amount of water from the Highline Well Field. The Cedar River of the Tolt River watersheds are in the Cascade Mountains, while the Highline Well Field is located north of Seattle Tacoma International Airport. Transmission pipelines carry the water to various reservoirs, standpipes, and tanks for further distribution. (See Utilities Figure A-4)

Seattle Public Utilities: existing capacity

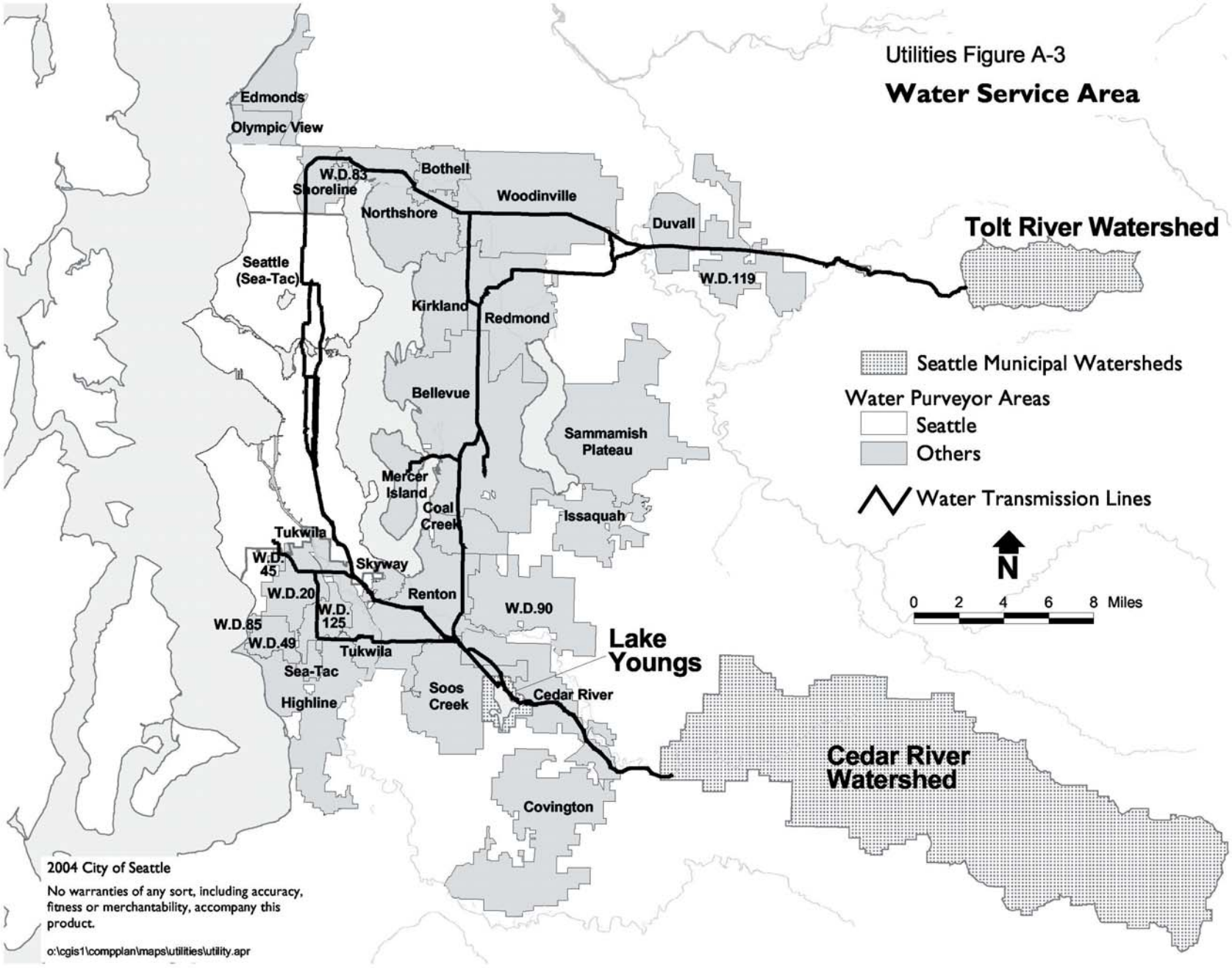
SPU's service area extends beyond the City's boundaries, making it impossible to assign for in-city service capacity figures to the supply sources and transmission lines. Snowpack, temperature and precipitation in the watershed areas are important natural factors that determine when and how much runoff will fill the reservoirs. Also affecting SPU's water supply is the environmental impact of the dams on the stream flows. Tribes and business, environmental, recreational and fisheries groups all have interests in the level of water in the streams.

The 50-year Cedar River Watershed Habitat Conservation Plan provides certainty for the City of Seattle's drinking water supply and protects and restores fish and wildlife habitats. In addition, the City recently completed a new treatment facility on the Tolt source that adds supply capacity. A new treatment facility on the Cedar source will be come online in 2004 that will improve drinking water quality. Under these current circumstances, SPU expects water supply to be adequate to serve the City's existing and forecast population for at least the next 20 years.

Distribution and storage facilities that serve Seattle residents have adequate capacity to serve the city. There are, however, a few areas that have substandard mains or experience low water pressure.

Low pressure areas include the higher elevations and other scattered locations in Maple Leaf (Maple Leaf Tank), Phinney Ridge (Woodland Park Standpipe), and Queen Anne Hill (Queen Anne Standpipe). These areas are all located near standpipe or/tanks and, therefore, receive water at or below the current design standard of 30 pounds per square inch (psi).

SPU is currently applying an asset management assessment to determine which pipelines would be replaced using the funds available in the six year CIP.


Utilities Figure A-3
Water Service Area
Edmonds
Olympic View
W.D.83
Shoreline
Bothell
Woodinville
Northshore
Duvall
Tolt River Watershed
Seattle
(Sea-Tac)
W.D.119
Kirkland
Redmond
Seattle Municipal Watersheds
Water Purveyor Areas
Seattle
Others
Bellevue
Sammamish
Plateau
Water Transmission Lines
Mercer
Island
Coal
Creek
Issaquah
N
Tukwila
W.D.
45
Skyway
W.D.20
Renton
W.D.90
0 2 4 6 8 Miles
W.D.
125
W.D.85
W.D.49
Tukwila
Lake
Youngs
Sea-Tac
Soos
Creek
Cedar River
Highline
Cedar River
Watershed
Covington
2004 City of Seattle
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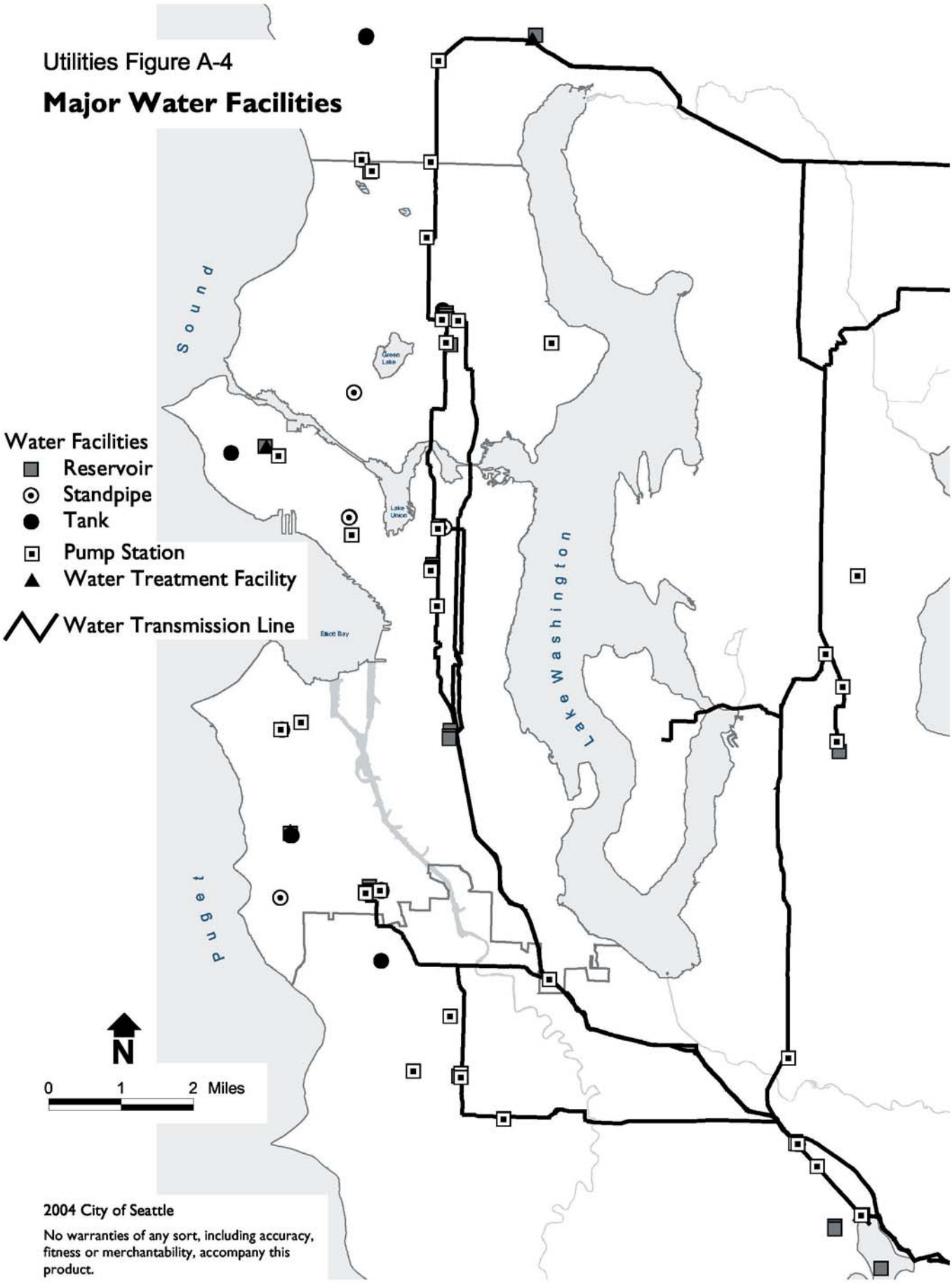

Utilities Figure A-4
Major Water Facilities
Water Facilities
Reservoir
Standpipe
Tank
Pump Station
Water Treatment Facility
Water Transmission Line
Sound
Lake Washington
Puget
Green Lake
Lake Union
Elliott Bay
N
0 1 2 Miles
2004 City of Seattle
No warranties of any sort, including accuracy, fitness or merchantability, accompany this product.

Seattle Public Utilities: anticipated future facilities

Most of the new households to be added within the city will be in multifamily units, which have a much lower per capita water demand than single family households.

The major impact of the growth envisioned by the Comprehensive Plan on the City's water facilities will be in the distribution system. Rehabilitation and improvements to the existing distribution system will be needed to support growth over the 20 year life of the Plan. SPU will work with developers to be sure needed infrastructure is in place for the development. Most of the time, developers finance the necessary distribution facilities.

Seattle Public Utilities: drainage & wastewater

SPU is charged with managing drainage, surface runoff, and sewer systems to meet public safety, water quality, and resource protection goals. SPU's service area covers the City of Seattle.

Seattle Public Utilities: inventory

Although a few small areas are still served by septic systems, almost all areas of the city are served by sanitary sewers. Three types of drainage and waste water systems are used in Seattle: combined sanitary/storm water sewer, partially separated sanitary/storm water sewer, and separate sanitary and storm water sewer systems. The SPU system collects residential, commercial, and industrial wastewater and delivers it to interceptor lines operated by the regional sewage treatment agency (King County). The sewage is then treated at the West Point Sewage Treatment Plant before being discharged into Puget Sound. Two other plants, Alki and Carkeek, have been converted to treat wet weather overflows only. (See Utilities Figure A-5).

Seattle Public Utilities: existing capacity

City Drainage and Wastewater System: The capacity of the wastewater system in some areas is limited when peak stormwater flows enter the combined systems. During or following intense or prolonged periods of rainfall, some of the systems cannot accommodate the combined runoff and sanitary sewage flows, resulting in combined sewer overflows (CSOs) being discharged into area waters. CSOs occur in both the regional and the City systems. Seattle's CSO Control Plan, adopted in 1988, and updated in 2001, addresses specific storage and separation projects to control CSOs and describes costs and schedules in a 20-year timeframe. SPU has already completed improvements to 69 of the 83 CSO locations and by the year 2006, Seattle will have reduced CSO volumes by at least 79 percent. Funding for these improvements is included in the Department's six-year CIP.

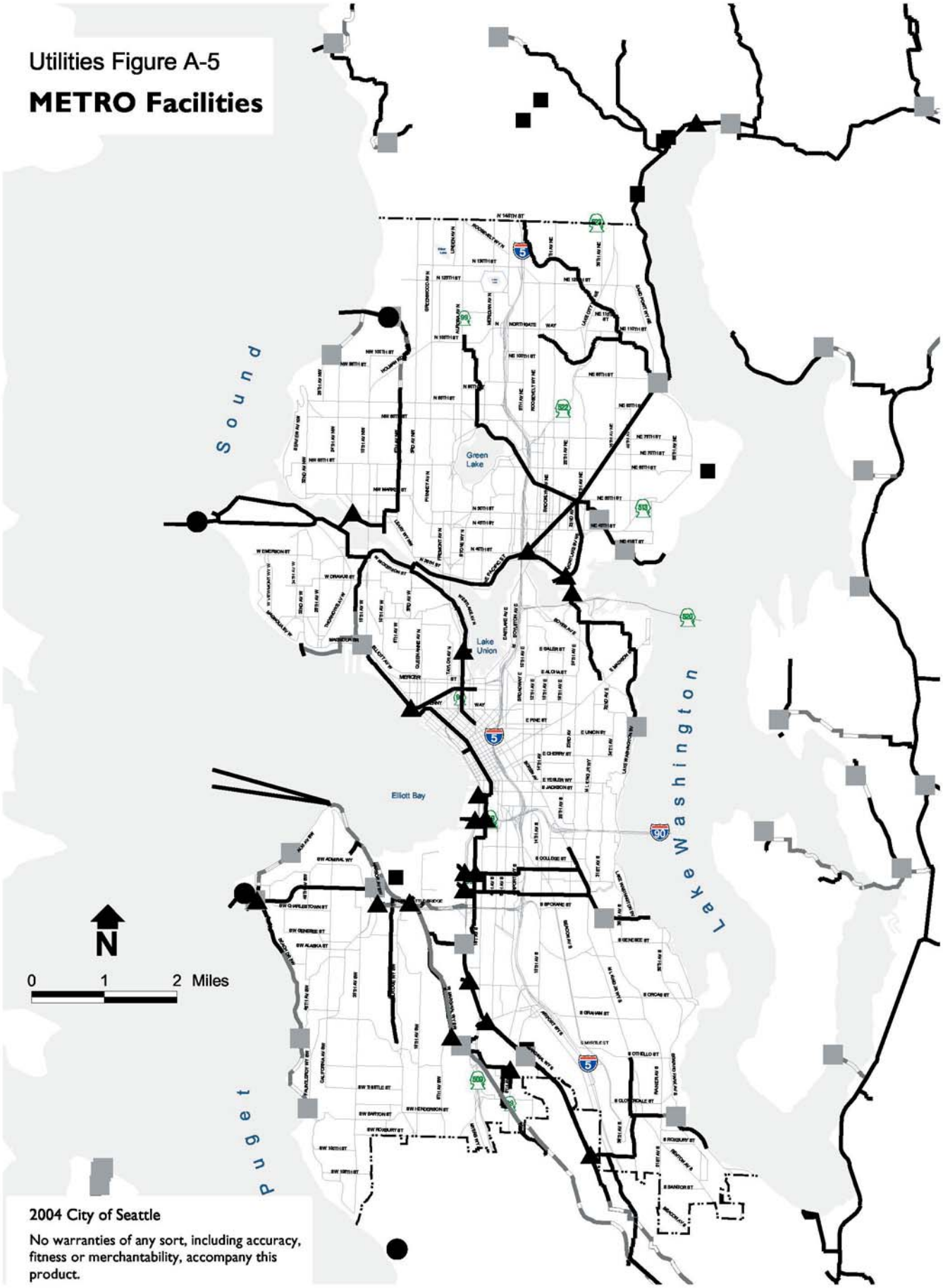
Seattle Public Utilities: regional wastewater treatment system

The West Point Treatment Plant is a secondary treatment facility, with a capacity of 133 million gallons per day (MGD), monthly average flow. It is designed to handle a peak flow capacity of 440 MGD, with 300 MGD receiving secondary treatment and the remainder primary treatment.

The West Point Treatment Plant serves 1.3 million people including residents of Seattle, King County north of Seattle, and South Snohomish County.

Utilities Figure A-5

METRO Facilities



Seattle Public Utilities: anticipated future facilities

City Facilities: Generally, the drainage and wastewater facilities in Seattle have been planned and sized to serve the maximum or build out conditions under zoning at the time and will be adequate to serve the level of increased growth proposed in the Plan. The capacity of the wastewater system is limited in confined areas of the city, where there have been historic hydraulic and system backup problems. These problems are being addressed through developer-funded facility upgrades and by Seattle Public Utilities' CIP.

Regional Facilities: Under King County's Regional Wastewater Services Plan, a third treatment plant is planned to be added in South Snohomish or North King County by about 2010 to handle the region's growth.

Seattle Public Utilities (solid waste)

SPU contracts with private firms for the collection of residential solid waste, recyclables, and yard waste and commercial solid waste within the city; collection of commercial recyclables is handled by the private sector, SPU provides for disposal of all solid waste generated within the city through a long-term contract with Waste Management Incorporated.

Seattle Public Utilities: inventory

The solid waste transfer system consists of four transfer stations. The two City owned transfer stations receive residential and commercial solid waste, while the two privately-owned transfer stations receive both commercial and other solid waste from within and outside the city of Seattle. Refuse is compacted into containers which are trucked to the Argo Intermodal Facility; from there, the containers are loaded onto trains for long-haul transport to a landfill owned and operated by Waste Management Incorporated in Gilliam County, Oregon. Most recyclable materials are handled by two privately-owned facilities. The City of Seattle also owns and operates two household hazardous waste facilities. (See Utilities Figure A-6 for their location).

Seattle Public Utilities: existing capacity

1. **Solid Waste Collection and Transfer Facility Capacity:**
   SPU's North and South Recycling and Disposal Stations (RDS) were designed in the 1960's for the transfer of solid waste, not for the current solid waste management strategy involving separation of recyclable materials. They were designed to handle 1,000 tons of solid waste per day (or 365,000 tons per year). In 2002, approximately 280,000 tons of solid waste were disposed of through the City's two transfer stations as well as more than 63,000 tons of yard waste, 2,000 tons of wood waste, 600 tons of metal appliances and more than 32,000 tons of other recyclables, totaling about 349,000 tons per year.

   SPU is currently evaluating options for increasing the RDS's capacity to handle future self-haul and contractor trips and tons at the transfer stations as part of a comprehensive Solid Waste Facilities Master Plan that will be completed in 2003.

   A portion of the collected commercial solid waste generated in the City is delivered to the two privately-owned transfer stations. These two facilities handle refuse as well as construction and demolition debris and other wastes from both inside and outside Seattle. In 1999, the two private stations handled 225,000 tons of solid waste from the City of Seattle. In recent years, Waste Management Incorporated has also built a new station for separated construction debris. The two private transfer facilities have the capability to handle 300,000 400,000 tons of waste per year including waste from Seattle's businesses. These facilities are located in the South Park area near the City's South Recycling and Disposal Station and south of downtown on South Lander Street.

Intermodal container loading capacity at Argo Yard is limited and the demand to process other domestic and international cargo through this yard is expected to increase.

2. **Recycling Processing Facilities:** Two private "material recovery facilities" (MRFs) serve as the processing and transfer facilities for most of the recyclable materials collected from in-City residents and businesses. These facilities are Recycle Seattle and Recycle America and they process and transfer a large proportion of the 320,000 tons of residential and commercial recyclable material that was collected through the City's solid waste system in 2000. Recycle America is located in the South Park area, near the City's South Recycling and Disposal Station, and Recycle Seattle is south of downtown on South Lander Street.

3. **Disposal Facilities:** Waste is compacted at the transfer stations into containers that are trucked to the Argo rail yard and loaded onto a train for long haul shipment to a landfill in Oregon. Presently, approximately 60 containers per day (each holding 25 28 tons), five days a week, are trucked to the railhead. The train to the landfill operates five times per week, with about 100 containers per trip. Waste containers from King, Snohomish, Island, San Juan, and Whatcom counties are also added to the train. Seattle and Washington Waste Systems (WWS) have a contract extending through March 31, 2028, and the terms of the contract are more than adequate to handle the additional waste volumes generated by projected growth.

Seattle Public Utilities: anticipated future facilities

The region's landfill capacity is large enough to last for at least the next 40-80 years. Private transfer stations have the capacity to handle projected solid waste tonnages, but SPU transfer facilities will need modifications if they are to adequately handle projected customer visits and to divert waste to effectively contribute to the City's waste reduction and recycling goals. Although the overall amount of waste generated in the city will increase with projected residential and employment growth, the percentage of waste that will be directed to disposal is expected to decrease because waste diversion through recycling is expected to increase. Seattle has adopted the goal of recycling 60 percent of its overall waste by 2008.

Residential waste is anticipated to comprise a decreasing share of the future combined waste stream. Commercial waste is projected to comprise a larger share of Seattle's waste stream in the future. Increased commercial sector waste disposal needs and an increased demand for recycling contractor services will be handled by private contractors and facilities. Representatives from both private transfer stations have indicated that the increased amount of waste can be handled within the existing facilities.

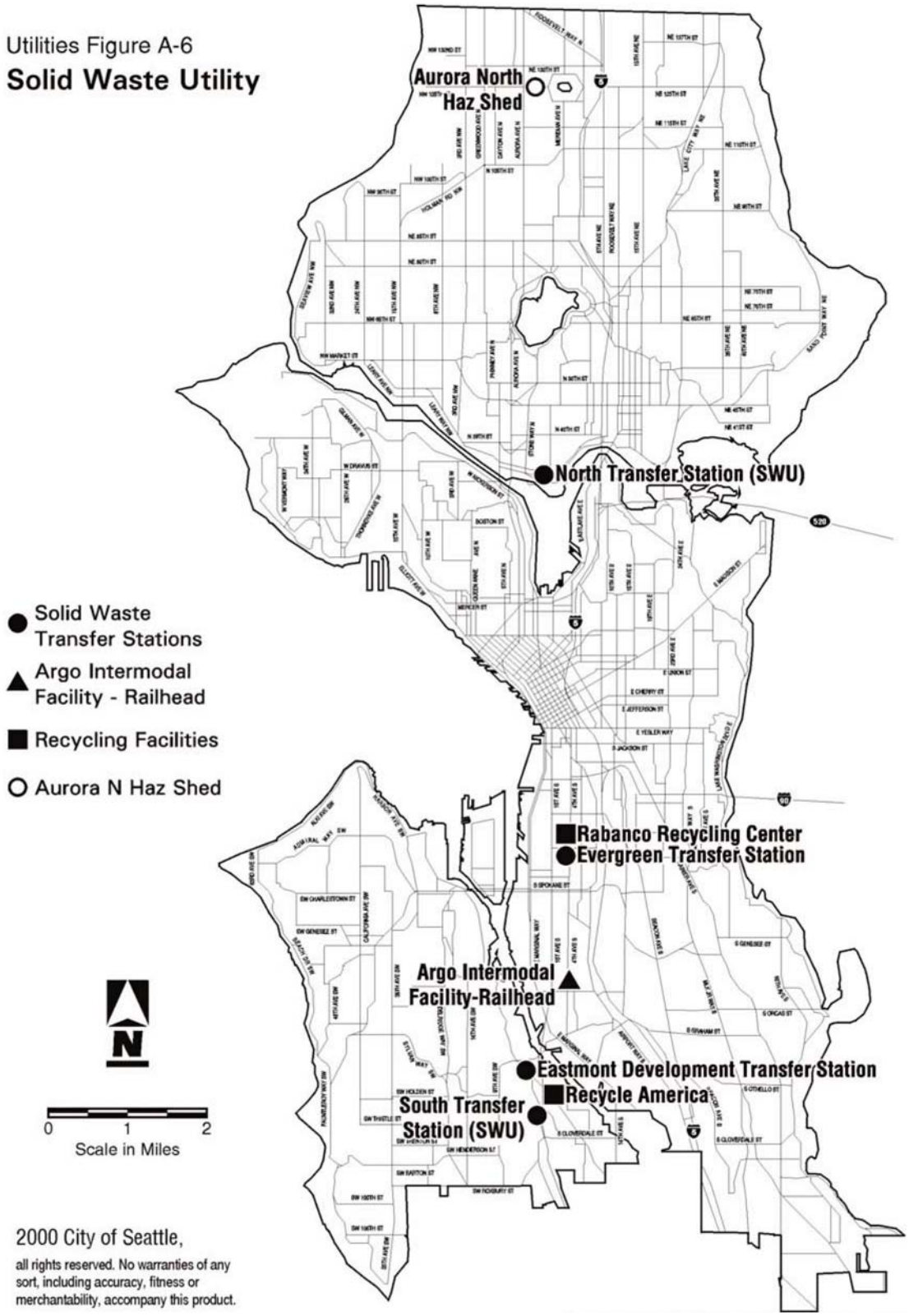
The two private materials processing facilities will handle a major share of the increase in volumes of recyclable material that will occur with projected growth. These businesses are dealing with services and markets at a regional level, so the specific impacts of increased Seattle tonnage are difficult to predict.

It is anticipated that the two City-owned transfer stations will be demolished and rebuilt to accommodate projected customer demand and diversion goals.

It is also anticipated that a new City-owned waste receiving and compaction station will be built in conjunction with an intermodal loading station. This intermodal solid waste transfer facility will eliminate the need to load containers at the existing Argo Yard.

Utilities Figure A-6

Solid Waste Utility



B Description & Inventory of Investor-Owned Utilities Serving Seattle

Puget Sound Energy

Puget Sound Energy (PSE) is an investor-owned electric and natural gas utility serving more than 1.2 million customers in 11 Western Washington counties. In the Seattle area, PSE only provides natural gas service. PSE's distribution of natural gas involves system pressure regulation and the development and maintenance of a network of gas mains to serve the utility's customers.

PSE is supplied by Northwest Pipeline Corporation, a natural gas wholesaler with interstate pipeline facilities extending from Canada to New Mexico. Two underground transmission lines branch off from the pipeline to serve more than 116,000 natural gas customers in the Seattle area.

QWEST Communications

QWEST Communications (QWEST) is the telephone company subsidiary of QWEST, Incorporated—one of the seven regional holding companies resulting from the divestiture of AT&T. QWEST is the principal provider of local telephone and related services in Seattle.

Of the 11 central switching offices (COs) serving Seattle, 10 are located within the city limits. For local exchange, the COs switch calls in and between the line exchange groupings (these groupings are addressed uniquely by an area code and the first three digits of a phone number). For long distance, the COs switch calls and mediate between the long-distance network and the local originating/terminating network. Due to advances in technology, additional capacity is easily and quickly added to the system. Four main cable routes emanate from each CO, running north, south, east, and west. Connected to these main feeder routes are branch feeder routes which support thousands of local loops providing dial tone service to individual subscribers. The COs are connected by inter-exchange trunk lines that may be aerial or buried, and copper or fiber optic line.

cellular communications

Seattle is served numerous cellular telephone companies, the largest of which include AT&T Wireless, Cingular, Sprint PCS, T-Mobile and Verizon Wireless. Cellular telephones are radios which send and receive signals from low power, ultra high frequency antennas positioned at several cellular communication ("cell") sites. The "cellular" name is derived from the manner in which coverage is provided by the cell sites. Each cell site has a signal radius, or coverage area, of only a few miles (depending upon terrain and capacity demand for service). As a cellular telephone user passes from one cell to the next, the call is transferred to an available channel at an adjacent cell site.

The cellular phone industry is extremely volatile, so any comprehensive listing of providers or cell sites would be obsolete upon printing. There are over 500 cell sites within the city of Seattle. Ownership of the sites changes as companies enter and leave the market.

cable television

Two cable communications companies hold City franchises for serving Seattle residents, Comcast and Millennium Digital Media. (See Utilities Figure A-7.) The City is currently in the franchise renewal period with Comcast whose franchise expires on January 20, 2006. Millennium Digital Media's franchise expires on March 1, 2008.

One of the primary components of a cable system is the head end site—an electronic control center where the information signal is processed for distribution through the cable system. This signal can be received off a hard line (cable), a satellite dish, microwave antennae, and/or a TV antenna. Comcast has two primary head end sites in the Seattle area. It's cable system passes 264,744 Seattle homes and serves 139,445 households. Comcast has 2,311 Aerial plant miles and 412 Underground plant miles in Seattle (includes both fiber and coaxial cable). Millennium has one head end site in Seattle, along with 155 miles of coaxial cable and 3,240 miles of fiber optic cable serving 14,998 households out of 51,463 homes passed.

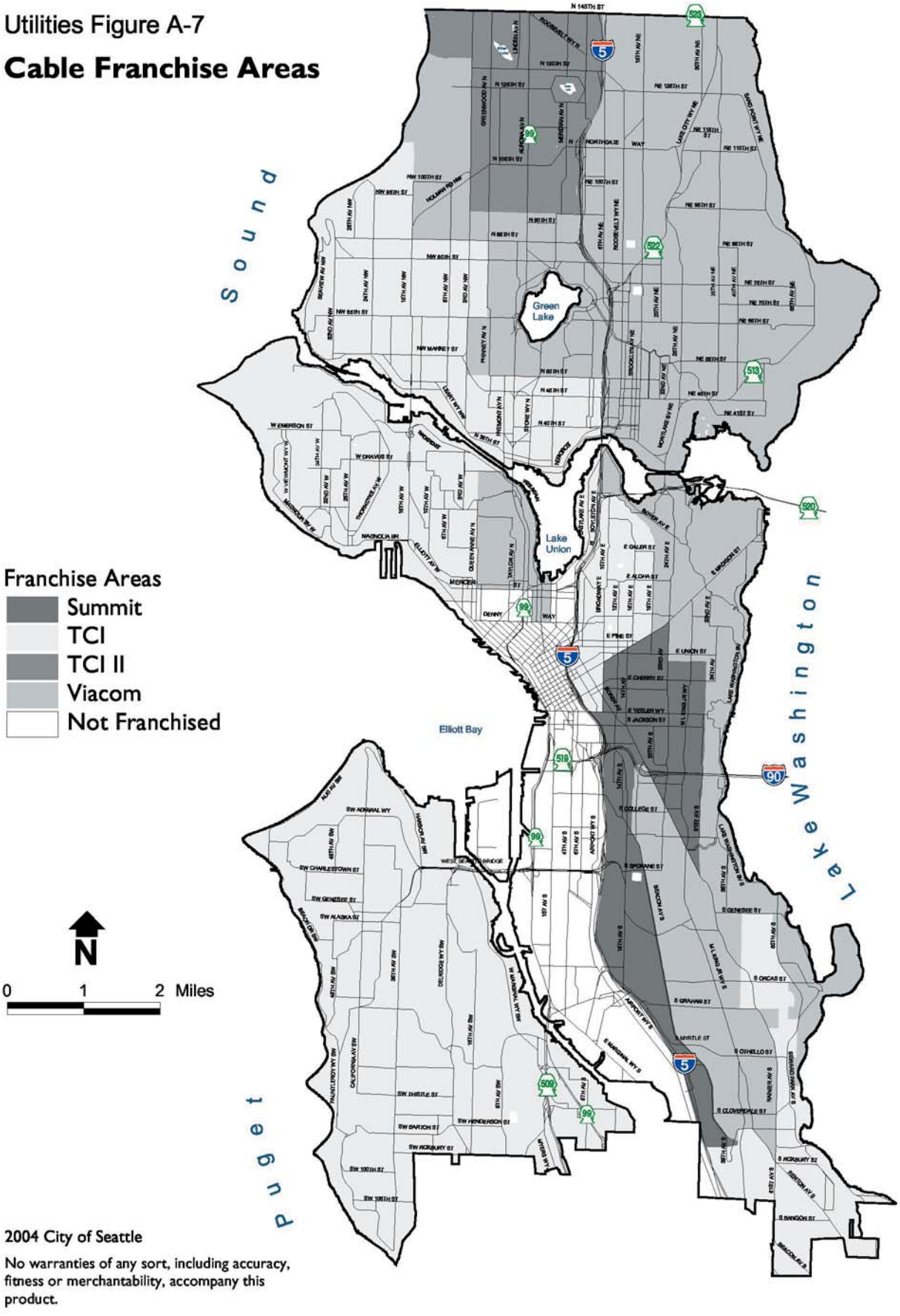
Seattle Steam

Seattle Steam is a district heating utility franchised by the City. Its service area encompasses roughly a square-mile area of the Central Business District, extending from Blanchard Street to King Street and from the waterfront to 14th Avenue, crossing over First Hill. (See Utilities Figure A-8.) The company provides steam to commercial, residential, and institutional customers for space and hot water heating, along with other uses.

Two steam-generating plants supply the network. The primary plant is located on Western Avenue at University Street. The secondary plant is located on Western Avenue near Yesler Way—the site of the original plant built in 1893. Total steam generation capacity is 750,000 pounds per hour, with boilers designed to burn either natural gas or residual oil. The network of insulated steel pipe encompasses a total length of over 18 miles beneath city streets and currently serves 220 customers.

Utilities Figure A-7

Cable Franchise Areas



Utilities Figure A-8

Seattle Steam
Steam Pipe System